REMARKS

Claims 1, 5-8, and 11-26 are pending in the application. Claims 1, 5, 11. 16, and 26 have been amended, and claims 2-4, 9-10, and 27- 41 have been cancelled. No new matter has been introduced by the amendment.

The applicants have amended their drawing by adding a new figure to illustrate the surface layer 6 that is described in their Substitute Specification, beginning on page 15, line 15 to page 16, line 10. The applicants have further amended their specification to identify the new figure. The applicants assert that no new matter is introduced by the amendment.

Claim Objection

An objection has been raised to claims 1, 26-28, and 29-40 for including a misspelled word. This objection is overcome in view of the amendment of claims 1 and 26 to correct the spelling of the word "stacked." The rejection of claims 27-28 and 29-40 is moot in view of the cancellation of these claims.

Rejection Under 35 U.S.C. 102(b)

Claims 1, 3-5, 12, 15, 21-28, 30, and 36-39, have been rejected over Henley et al. This rejection is overcome in view of the amendment of claim 1, together with the following remarks.

Claim 1, as amended, recites a method of fabricating a stacked structure that includes the sequential steps of selecting first and second plates where at least a portion of one of the first or second plates has a surface incapable of sticking to a surface of another plate. A sacrificial layer is produced on at least a part of the surface of the first or second plate. The first and second plates are bonded together. An addition step includes at least partially eliminating the sacrificial layer, such that the portion having the roughened surface at least partially faces the other plate. Although, the steps labeled a), b), and c) are sequential, the last step can be performed at any point in the recited process.

As described in the applicants' substitute specification "a portion of the intermediate sacrificial layer between the two plates may be eliminated, for example, to obtain two facing surfaces at least one of which is appropriately structured. This prevents the two surfaces sticking together following movement of the two substrates toward each other." (Substitute Specification, pg. 7, lines 20-25). The importance of preventing sticking in SOI structures used in MEMS fabrication and the limitations of prevention methods of the prior art are described by the applicants in the Background section of their specification. (Substitute Specification, pg. 3, line 29 to pg. 6, line 11).

The Examiner alleges that Henley et al. disclose the applicants' process including the step of producing a sacrificial layer (114). (Office Action, pg. 2-3). Henley et al. describe planarizing layer (114) used in a process for reusing a donor substrate (10). (See, Col. 8, line 10 to Col. 9. line15). The donor reuse process uses the planarizing layer (144) on the donor substrate (10), instead of polishing the substrate, so that the donor substrate does not have to be removed from the clean room. (See, Col. 8, lines 18-26). In this process, the planarizing layer (144) is formed on the donor substrate (10) and the substrate is implanted. The donor wafer is then bonded to a target wafer (53), and the thin flim splitting process is performed.

The applicants' claimed process is patentably distinct from the donor wafer reuse process of Henley et al. The applicants' sacrificial layer is at least partially eliminated so that a portion of one plate faces the other plate. This process reduces sticking and, in one exemplary embodiment, the eliminated areas can be in areas of the sacrificial layer in contact with mobile portions. (Substitute Specification, pg. 1, lines 10-15 and pg. 14, lines 16-28). There is no suggestion that the planarizing layer of Henley et al. be at least partially removed in the disclosed donor wafer reuse process.

The rejection of claims 3-4 is moot in view of the cancellation of these claims.

Claim 5 has been amended in view of the cancellation of claim 4, from which it formerly depended. Claim 5 is allowable at lest in view of its dependence from claim 1.

Claims 12, 15, 21-25 are allowable at least in view of the amendment and remarks pertaining to claim 1, from which they directly or indirectly depend.

Claim 26 recites a stacked structure fabricated by the method of claim 1. Accordingly, this claim is allowable in view of the amendment and remarks pertaining to claim 1.

The rejection of claims 28, 30, and 36-39 is moot in view of the cancellation of these claims.

Claims 1-2, 6-10, 13, 16, 18, 27, 31-34, and 41 have been rejected over Enquist. This rejection is overcome in view of the amendment of claim 1, together with the following remarks.

Enquist discloses forming a layer (12) on a first substrate and polishing the layer. A second layer (14) can be formed on the first layer (12). A film (17) is formed on a substrate (16), and the two substrates are bonded together. (See, FIGs. 1-4, paras. 0062-0066). In a disclosed solar cell fabrication process, substrates (122) and (127) are covered with bonding layers and bonded together. (See. FIGs. 23-27, paras. 0122-123). Additional bonding processes are disclosed involving electrical devices. (See. FIGs. 37A-37D, paras. 0128-133). Enquist does not suggest or disclose partially eliminating one of the two layers so that a portion of one substrate faces the other substrate. Accordingly, the applicants' claims distinguish over Enquist.

The rejection of claims 2, 9-10, 27, 31, 34, and 41 is moot in view of the cancellation of these claims.

Claims 5, 6-8, 13, 16, and 18 are allowable at least in view of their direct or indirect dependence from claim 1.

Claims 1, 6, 9, 11, 27, 31, 34-35, and 40 have been rejected over Tong et al. This rejection is overcome in view of the amendment of claim 1, together with the following remarks.

Tong et al. disclose a bonding process in which a bonding layer (32) is formed on a substrate and a very slight etch (VSE) process is carried out to activate the surface. The layer is then bonded to a layer overlying another substrate (35) (FIGs. 3A-3E, Col. 5, line 16 to Col. 7, line 13). Additional bonding sequences are disclosed using the VSE process. Tong et al. do not suggest or disclose partially eliminating one of the two layers so that a portion of one substrate faces the other substrate. Accordingly, the applicants' claims distinguish over Tong et al.

The rejection of claims 9, 27, 31, 34-35, and 40 is moot in view of the cancellation of these claims.

Claims 6, 11, and 17 are allowable at least in view of their dependence from claim 1.

Rejection Under 35 U.S.C. 103(a)

Claim 14 has been rejected over Henley et al. in view of Maleville et al. This rejection is overcome in view of the amendment of claim 1, together with the following remarks,

The applicants' foregoing remarks pertaining to Henley et al. are incorporated herein. Maleville et al. disclose a separation process in which gas pressure from implanted elements forces a bonded structure to separate. The addition of Maleville et al. does not overcome the deficiency of Henley et al. Neither reference suggests or discloses partially eliminating one of the two layers so that a portion of one substrate faces the other substrate.

Claims 19-20 have been rejected over Enquist in view of Haberger et al. This rejection is overcome in view of the amendment of claim 1, together with the following remarks

The applicants' foregoing remarks pertaining to Enquist are incorporated herein. Haberger et al. disclose a bonding process in which strip-shaped channels formed (5) are formed in an oxide layer (4) overlying a wafer (2). After bonding two wafers together and further processing, an etching liquid is

introduced into the channels to detach chips (9). (See, FIG. 1, Col. 6, lines 14-58). Channels can also be formed in an oxide layer overlying the other wafer.

The applicants assert that their claims are not obvious in view of the cited references. Claim 1 recites method in which a portion of roughened surface portion is formed on a surface of one plate and upon bonding the roughed surface portion faces the other plate. Through partial elimination of the sacrificial layer, the claimed surface portion is incapable of sticking to a surface of another plate. Neither reference suggests or discloses exposing a non-sticking surface to the other plate, though at least partial elimination of a sacrificial layer. Claims 19 and 20 distinguish over the cited references at least in view of their indirect dependence from claim 1.

The applicants have made novel and non-obvious contributions of the art of stacked device structure fabrication. The claims at issue distinguish over the cited references and are in condition for allowance. Accordingly, such allowances now earnestly request it.

Respectfully submitted,

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"Annotated Sheet"

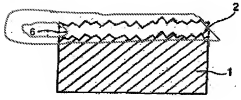

Fig. 7